

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

Claim 1 (Canceled)

Claim 2 (Currently amended): A computer comprising computer hardware system for use in generating paths ~~finding a path~~ for electrically conductive traces ~~to be routed~~ within a routing space comprising:

means for receiving information representing a proposed physical layout of a routing space of an electronics system including locations of obstacles within said proposed physical layout;

means for creating an initial array of nodes within the ~~routing space~~ proposed physical layout;

adjusting means for adjusting within said proposed physical layout said initial array of nodes, ~~including adjusting nodes between at least a pair of obstacles in said routing space~~ said means for adjusting including locating a particular number of nodes between a pair of said obstacles, said particular number corresponding to a maximum number of traces that can pass between said obstacles, each of said nodes positioned between said pair of said obstacles representing a possible location of one of said traces that can pass between said obstacles; and

means for selecting a path through said adjusted array of nodes resulting in creation of a trace that passes between said pair of obstacles in said proposed physical layout.

Claim 3 (Currently amended): The computer system of claim 2, wherein said adjusting means for adjusting comprises[[:]] determining means for determining [[a]] said particular number of paths traces that may pass between said pair of obstacles; and

~~means for adjusting a number of nodes between said pair of obstacles to be equal to said number of paths.~~

Claims 4 and 5 (Canceled)

Claim 6 (Currently amended): The computer system of claim 2, wherein said adjusting means adjusts locations of said nodes located between said pair of obstacles for adjusting locates said particular number of nodes along a line segment between said pair of obstacles.

Claim 7 (Currently amended): The computer system of claim 6, wherein said adjusting means further positions said nodes located between said pair of obstacles to correspond to permissible locations of paths between said obstacles line segment is a shortest line segment between said pair of obstacles.

Claim 8 (Currently amended): The computer system of claim 2, wherein said adjusting means for adjusting adjusts a location of each of at least one of said nodes in accordance with a proximity of said node to an object in said routing space.

Claim 9 (Currently amended): The computer system of claim 2 further comprising linking means for linking said adjusted initial array of nodes.

Claim 10 (Currently amended): The computer system of claim 9, wherein said linking means for linking creates a link between each node in said array and nodes within a predetermined proximity of said each node without crossing any of said links.

Claim 11 (Currently amended): The computer system of claim 10, wherein said path traverses ones of said links.

Claim 12 (Currently amended): A computer comprising computer hardware system for use in generating paths ~~finding a path~~ for electrically conductive traces ~~to be routed~~ within a routing space comprising:

means for receiving information representing a proposed physical layout of a routing space of an electronics system;

means for providing an array of linked nodes within said proposed physical layout of said routing space, said array including a source node, a destination node, and a plurality of intermediate nodes; and

means for determining a path from said source node to said destination node through said linked nodes resulting in creation of a trace from said source node to said destination node in said proposed physical layout.

wherein said means for determining comprises:

means for iteratively creating a plurality of partial paths, each said partial path extending from said source node to an intermediate node in said array;

means for determining a routing cost of each said partial path; and

means for discarding all of said partial paths that extend to one intermediate node except the partial path with the lowest routing cost if more than one partial path extends to said one intermediate node.

Claim 13 (Currently amended): The computer system of claim 12, wherein said means for iteratively creating ~~a plurality of partial paths~~ creates [[a]] said plurality of partial paths by creating initial paths from said source node to first nodes linked to said source node.

Claim 14 (Currently amended): The computer system of claim 13, wherein said means for iteratively creating ~~a plurality of partial paths~~ creates [[a]] said plurality of partial paths further by extending said initial paths from said first nodes to nodes linked to said first nodes.

Claim 15 (Currently amended): The computer system of claim 12, wherein said means for providing further comprises means, ~~for each node in said array,~~ for creating for each node in said array a link between said each node and nodes within a predetermined proximity of said each node without crossing any of said links.

Claim 16 (Currently amended): The computer system of claim 12, wherein said means for providing further comprises means, ~~for each node in said array,~~ for creating for each node in said array shortest links between said each node and nodes within a predetermined proximity of said each node without crossing any of said links.

Claim 17 (Currently amended): The computer system of claim 12, wherein said means for providing further comprises:

- means for selecting one of said nodes of said array;
- means for creating a link to another node of said array that is within a predetermined distance of said selected node; and
- means for deleting, if said created link crosses another link, a longest of said crossed links.

Claim 18 (Currently amended): A computer comprising computer hardware for use in generating paths for electrically conductive traces within a routing space system comprising:

means for receiving information representing a proposed physical layout of a routing space of an electronics system including locations of obstacles within said proposed physical layout;

means for creating an initial array of nodes within [[a]] said proposed physical layout of said routing space;

~~means for adjusting said initial array of nodes, including adjusting a location of each of at least one of said nodes in accordance with a proximity of said node to an object in said routing space;~~

means for applying forces to ones of said nodes, wherein a magnitude of one of said forces applied to one of said nodes is proportional to a proximity of said one of said nodes to one of said obstacles;

means for moving within said proposed physical layout each of said ones of said nodes in accordance with said force applied to said one of said nodes; and

means for selecting a path through said adjusted array of nodes resulting in creation of a trace that passes through at least one of said nodes moved by said means for moving.

Claims 19 and 20 (Canceled)

Claim 21 (Currently amended): The computer system of claim [[20]] 18, wherein said ~~means for adjusting a location of each of at least one of said nodes further comprises:~~ means for applying applies a plurality of forces to one of said nodes, wherein a magnitude of each of said plurality of forces corresponds to [[said]] a proximity of said node to one of said plurality of obstacles; and said means for moving moves one of said nodes in accordance with a vector sum of said plurality of forces applied to said one of said nodes.

Claims 22-43 (Canceled)

Claim 44 (Currently amended): The computer system of claim 2, wherein said path is stored within said ~~system~~ computer.

Claim 45 (Canceled)

Claim 46 (Currently amended): The computer system of claim 12, wherein said path is stored within said ~~system~~ computer.

Claim 47 (Canceled)

Claim 48 (Currently amended): The computer system of claim 18, wherein said path is stored within said ~~system~~ computer.

Claims 49-54 (Canceled)

Claim 55 (Currently amended): The computer system of claim 2, wherein said means for creating an initial array of nodes creates the initial array of nodes in a honeycombed pattern.

Claim 56 (Currently amended): The computer system of claim 2, wherein said means for creating an initial array of nodes creates the initial array of nodes wherein a random location of at least one node is generated.

Claim 57 (Currently amended): The computer system of claim 18, wherein said means for creating comprises means for selecting spacings of the initial array of nodes to form a honeycombed pattern.

Claim 58 (Currently amended): The computer system of claim 18, wherein said means for creating comprises means for generating a random location for at least one node.

Claims 59-62 (Canceled)

Claim 63 (New): The computer of claim 12, wherein said means for determining a routing cost determines said routing cost of each said partial path by summing a length of said partial path and a length of a straight line from said intermediate node to which said partial path extends to said destination node.